

CLAIMS

1. A method of locating mobiles via a dynamic base station, the method comprising:
transmitting a first wireless signal from the dynamic base station at a first time;
receiving the first wireless signal at the mobile;
transmitting a second wireless signal from the mobile in response to receiving the
5 first wireless signal;
receiving the second wireless signal at the dynamic base station at a second time;
determining a time difference between the first time and the second time;
determining an angle of arrival of the second wireless signal; and
locating the mobile based on the angle of arrival and the time difference.
- 10 2. The method of claim 1, wherein transmitting the first wireless signal comprising:
generating an identification request; and
modulating the identification request with a multiple access scheme.
3. The method of claim 2, wherein the multiple access scheme comprises at least one
of a code-division multiple access ("CDMA") scheme, a direct sequence CDMA ("DS-
15 CDMA"), a synchronous CDMA ("SCDMA"), and an ultra-wide band multiple access
("UWB-MA").
4. The method of claim 1, wherein transmitting the first wireless signal comprising
providing a carrier frequency between about 2 GHz and about 3 GHz.
5. The method of claim 1, wherein receiving the second wireless signal comprises
20 receiving the second wireless signal at at least one of an antenna array and a rake receiver
array.
6. The method of claim 1, wherein the dynamic base station is stationary.

7. The method of claim 1, wherein transmitting the first wireless signal comprises transmitting the first wireless signal using at least one of a long term fading technique, and short term fading technique.
8. The method of claim 1, further comprising providing a communication bandwidth
5 between about 10 MHz and about 10 GHz.
9. The method of claim 1, further comprises beamforming the second wireless signal.
10. The method of claim 1, wherein transmitting the first wireless signal comprises omni-directionally transmitting the first wireless signal.
- 10 11. The method of claim 1, wherein determining a time difference comprises determining velocities of both the mobile and the dynamic base station.

12. A method of locating a target from a base, wherein the base has an omni-directional means for transmitting a base wireless signal, and an antenna array means for receiving an target signal and capable of determining a reception angle of the target signal, and the target has a transponding means capable of receiving an activating signal and responding with a target signal, the method comprising:

omni-directionally transmitting the activating signal from the omni-directional means at a first time;

activating the transponding means at the target in response to receiving the activating signal;

transmitting a target signal from the transponding means after the transponding means has been activated;

receiving the target wireless signal at the antenna array means at a second time;

determining from the antenna array means the reception angle of the target signal;

comparing the first time with the second time to obtain a signal travel time; and

locating the target based on the signal travel time and the reception angle of the target signal.

13. The method of claim 12, wherein transmitting the activating signal comprising: generating an identification request; and modulating the identification request with a multiple access scheme.

14. The method of claim 13, wherein the multiple access scheme comprises at least one of a code-division multiple access ("CDMA") scheme, a direct sequence CDMA ("DS-CDMA"), a synchronous CDMA ("SCDMA"), and an ultra-wide band multiple access ("UWB-MA").

15. The method of claim 14, wherein transmitting the activating signal comprising providing a carrier frequency between about 2 GHz and about 3 GHz.

16. The method of claim 12, wherein receiving the target wireless signal comprises receiving the target wireless signal at a rake receiver array.

17. The method of claim 12, wherein transmitting the activating signal comprises transmitting the activating signal using at least one of a long term fading technique, and short term fading technique.
18. The method of claim 12, further comprising providing a communication
5 bandwidth between about 10 MHz and 10 GHz.
19. The method of claim 12, further comprises beamforming the target wireless signal.
20. The method of claim 1, wherein the dynamic base station is stationary.

21. A method of locating a selected one of a plurality of mobiles from a dynamic base, the method comprising:

transmitting a wireless activating signal from the dynamic base at a first time;
activating with the wireless activating signal a transponder on each of the plurality
5 of mobiles;

in response to activating each transponder, transmitting with each transponder a wireless signal having a unique mobile signature;

receiving the wireless signals at the dynamic base at a plurality of arrival times;

comparing the unique mobile signature of each wireless signal with a known

10 unique mobile signature of the selected mobile;

identifying the wireless signal of the selected mobile based upon a match between the known unique mobile signal and the unique mobile signal of one of the wireless signals;

determining a reception angle of the wireless signal of the selected mobile;

15 comparing the first time with the arrival time of the wireless signal of the selected mobile to obtain a time difference; and

locating the selected mobile based on the time difference and the reception angle.

22. The method of claim 21, wherein transmitting the wireless activating signal comprising:

20 generating an identification request; and

modulating the identification request with a multiple access scheme.

23. The method of claim 22, wherein the multiple access scheme comprises at least one of a code-division multiple access ("CDMA") scheme, a direct sequence CDMA ("DS-CDMA"), a synchronous CDMA ("SCDMA"), and an ultra-wide band multiple
25 access ("UWB-MA").

24. The method of claim 21, wherein transmitting the wireless activating signal comprising providing a carrier frequency between about 2 GHz and about 3 GHz.

25. The method of claim 21, wherein receiving the mobile wireless signal comprises receiving the mobile wireless signal at a rake receiver array.

26. The method of claim 21, wherein transmitting the wireless activating signal comprises transmitting the wireless activating signal using at least one of a long term
5 fading technique, and short term fading technique.

27. The method of claim 21, further comprising providing a communication bandwidth between about 10 MHz and 10 GHz.

28. The method of claim 21, further comprises beamforming the mobile wireless signal.

10 29. The method of claim 21, wherein the dynamic base is stationary.